An attempt to classify transport processes in mountain streams

Alain Recking, Guillaume Piton, and Clément Misset
Irstea - UGA, ETNA, Saint-Martin-d'Hères cedex, France (alain.recking@irstea.fr)

Bedload transport is a complex process which has challenged scientists and practitioners for decades. One reason why we still not find a consensual framework for this phenomenon may be that we are not dealing with one unique, but with several different processes. Indeed, can we reasonably compare the transport of sand in large lowland rivers and the transport of cobbles in steep mountain streams, despite that both result to a sediment transfer under a biphasic mode? The question is even more crucial when considering that the same equations, for instance the Meyer-Peter Muller, are used indifferently for both kinds of rivers.

In this presentation we postulate that the absence of a generalized alluvial context in mountain streams cause the co-existence of many transport scenarios, which need to be well understood, in order to select the suitable modelling approach. An attempt to identify and describe these scenarios is proposed. Despite this presentation mainly focus on bedload, we will also show that such a scenario approach may also be required for suspended load.